

showing no fear. In one of the lagoons as many as six pairs came up to me, and every pair consisted of a larger clear grey bird, as described, and a smaller brown one.

Mr. Hobbs and also Mr. Aylwin of Jente Grande, who are both observers of birds, told me that these Ducks often made their nests at a considerable distance from the water.

Besides their usual flight, these birds have a way of flying over the water, just touching it or striking it with the tips of their wings; but this is quite a different way of progressing from that of *Tachyeres cinereus*, which cannot raise itself above the water.

I saw this species only in Tierra del Fuego, and did not meet with a single specimen in the Smith Channel and more to the north.

I have seen skins of this species in the British Museum and the Leyden Museum from the Falklands, and there is a splendidly mounted pair in the Museum of Buenos Ayres from Tierra del Fuego.

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XXIV.—*On the Bird-life of Houtman's Abrolhos Islands, Western Australia.* By CHARLES PRICE CONIGRAVE, F.R.G.S., M.R.A.O.U.

(Plates XV.—XVIII.)

LYING some fifty miles off the mainland of Western Australia is an archipelago of small islands known as Houtman's Abrolhos which have been very intimately connected with the early history of Australia. They were first discovered by Frederic van Houtman in the year 1605, and their name, Abrolhos, is a contraction of three Portuguese words, "abri vossos olhos," meaning keep your eyes open, owing to the danger they were to the early navigators when making their way from the Cape to Java. They were the scene of the wreck of Capt. Pelsart's ship the 'Batavia' in 1629, and the mutiny of part of his crew under Jerome Cornelis, his supercargo. The largest of the islands is called after the ill-fated Dutch Captain.

The writer has been fortunate in visiting the Abrolhos on two occasions, first in 1897 and again recently, when, as a member of a scientific party, he had many opportunities of studying the interesting forms of marine life that the islands are justly famous for. At a distance of some three hundred miles to the north of the capital city, Perth, is situated the port of Geraldton, the outlet for the rich auriferous and agricultural districts that make such a valuable portion of the great State of Western Australia. Fifty miles out to sea from Geraldton we find the widely-scattered group of islands comprising the Abrolhos Archipelago. Zoologically the islands are of the utmost interest, for, being largely of coral formation, a field is there vacant for investigation and study of that marvellous organism—the coral polyp. For ages past, too, this spot has been the rendezvous of millions of sea-birds that congregate there during the summer months for the purpose of breeding. The droppings of these birds for thousands of years has resulted in a big deposit of a valuable guano, which has been the upkeep of a thriving industry for upwards of twenty years. Until the year 1902 large quantities of Abrolhos guano were shipped to the United Kingdom and foreign countries, but recent legislation has decreed that the valuable manure may now be used only within the State.

The Abrolhos Islands are the southernmost point where living corals may be seen, at any rate in the form of reefs. The whole of the archipelago is divided into three distinct groups, made up of a series of islets and submerged reefs. "Batavia's Churchyard," or as it is now called Pelsart Island, is the largest, being some seven miles in length. From the southern extremity sweeps out a majestic fringing reef, having under its protection practically the whole of the remainder of the group. Over this reef at all times may be seen the great ocean-rollers pounding against the first obstruction from African shores. The large area within the reef is of shallow depth, and here the corals in all their wealth of form and colour are on every hand.

Skippers sailing boats to the Abrolhos invariably leave Geraldton during the midnight hours in order that the dangerous reefs and shoals of the islands may be negotiated in early daylight. In our case, after a rough and tempestuous trip across, we found our craft at daybreak heading a course amongst a perfect maze of reefs and islets. The pretty mottling of the surface where the coral lumps came near to the surface was a sure guide to our skipper to keep in darker water, where the depth was greater. Away to the west stretched the fringing reef, with the never-ending breakers dashing themselves into showers of spray. Trailing like a great white ribbon against the dark sea was Pelsart Island—only at the northern end did any vegetation show, and there just a splash of green, indicating a dense mangrove thicket. The headquarters of the guano industry are at the southern end of the island, where a few corrugated iron houses stand near the beach, and a long jetty runs out into deep water. Here we landed and were at once made welcome by the Manager of the island. The guano collecting was in full swing, the manure being dug up and thrown through large screens to rid it of roots, stones, and other débris, preparatory to being run on light tramways to the jetty, from where it is taken in luggers to the larger vessels that are compelled to lie out in the offing some distance away. Only during the summer months is the island inhabited, for when the winter gales rage in all their fury, life in such a place would be wellnigh unbearable, if not quite impossible.

Early in August the immense hordes of sea-birds commence to congregate from the great southern oceans, and by the end of October all the rookeries are fully occupied, and then it is that one may see perhaps the most wonderful zoological sight in the world. Every bush is occupied by a bird or its nest, and not alone the low scrub is tenanted. The ground also is covered with birds. The commonest species to be found nesting are the Noddy Terns (*Anous stolidus*) and the Sooty Terns (*Sterna fuliginosa*), although something like forty species frequent the Abrolhos during the summer months.



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NODDY TERNS (*Anous stolidus*)  
On Pelsart I., Houtman's Abrolhos.



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NODDY TERNS (*Anous stolidus*)

Nesting on Pelsart I., Houtman's Abrolhos.



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LESSER NODDY TERN (*Micranous tenuirostris*)

Among the mangroves on Pelsart I., Houtman's Abrolhos.

THE FRINGING REEF OF PELSART I., HOUTMAN'S ABROLHOS.

AT LOW TIDE.

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Close to the Pelsart settlement is the largest rookery. Thousands upon thousands of birds are constantly wheeling overhead, and the resulting noise from the harsh screaming becomes almost deafening. We make our way through the low scrub, but beyond a little scuttling on our first appearance, the birds exhibit no alarm. It is only with great difficulty that we avoid stepping on to a bird or its nest, so closely do they sit. Many and many an acre is occupied in this way, and then, besides, the Mutton-birds (*Puffinus chlororhynchus*) burrow into the guano, and so in some places there are three tiers of birds, so to speak—in the bushes, on the ground, and in the subterranean hollows as well. Looking seawards over the partly submerged reefs, we see great flocks of birds foraging for their food supply, and the fact comes forcibly home to one that very marvellous indeed is the supply of Nature. Millions upon millions of birds are here daily getting their sustenance provided for them by a great Creator.

Towards the northern end of Pelsart Island are several small lagoons, prettily enclosed by wide-sprawling mangroves. These were occupied by another species, the Lesser Noddy Tern (*Micranous tenuirostris*), very similar in appearance to the Noddy, but smaller, and more fussy and garrulous. The sandy foreshore within the protection of the large fringing-reef gives sanctuary for many of the wading birds—in fact, every nook and corner of the island is occupied by birds.

A few miles away lies Middle Island. Here we wandered over the reef and studied the corals and all the wonderful growths of a sub-tropical sea. Immense sea-urchins with spines a foot in length, the Bêche-de-mer or Sea-slug, the gaily-coloured fishes, and multitudes of smaller objects were everywhere in plenty.

With reluctance it was that, after a few days' stay at this island, we had to set sail for the northward, for, tied by time, it becomes necessary for a complete cruise through the archipelago to move apace. At this period of the year (November) the strong gales, "southerly busters," are very prevalent. Then it is wise to remain in shelter, for no



sailing-boat could well make progress in such a sea as is lashed up; at any rate, such an experience would be decidedly uncomfortable.

A few lovely days, with hardly a cloud in the sky, will pass, and then, heralded by a gusty wind, will burst the gale, which, howling and roaring as it does, makes one feel very contented when the lugger is safely anchored on the lee of an island.

Rat Island, twenty miles to the north of the first-named, is another great nesting-place for the birds, and this was our objective on leaving the guano station. By midday we were rolling in a big sea alongside Wooded Island, a patch of green and white outlined by great white combers dashing on to the fringing reefs. Running alongside a perpendicular reef in perfect shelter, we went ashore and examined the rookery of the Lesser Noddies. Here some ten acres of mangrove trees were thickly occupied by these pretty little brown birds. Every branch supported dozens of nests, roughly constructed of seaweed. As we go amongst the trees great is the clatter, for the Lesser Noddies believe not in being disturbed, at any rate without objecting. Little downy objects here and there are recognised as baby terns, their parents hovering closely to guard their offspring if possible from danger. There is, however, no time for close study when the southerly gale is brewing; so after a hurried visit, during which the photographers are hard at work, we wander over the banks of dead and bleached coral back to the lugger. Rat Island lies four miles away to the north, and, with half a gale piping behind, we wallow hither in an angry sea. Once inside the line of reef the water is calmer, and by late afternoon we are comfortably ashore. This island was the home of a number of Italian fishermen, who, although our tongues were foreign, gave us a most hospitable welcome. That evening we gathered in their little stone hut, and round a blazing fire passed time pleasantly in broken conversation with these hardy toilers of the sea. During our stay we got quite a picturesque glimpse into the fishing industry. At daybreak a fleet of

small boats would depart for the various Schnapper grounds, where during the day the men would toil for the harvest of the sea. The Schnapper (*Pagrus unicolor*) is a common Australian edible fish. As afternoon wore on to evening, back through the reefs the men would come, each with his respective catch. The fish were then cleaned and placed in ice, aboard a large lugger, which made weekly trips to Geraldton with several tons of fish. We were prisoners on Rat Island for several days, owing to the gale; but the time passed pleasantly enough in the wonderfully interesting work that we were able to carry out amongst the marine fauna. At last, after saying farewell to our lonely fisherfolk, we sailed north again for the Wallaby Islands, distant some thirty miles.

Quite different in character from the rest of the islands are the last-named, for here, typical mainland forms, such as the Wallaby and various snakes and lizards, occur in plenty. Heavily scrubbed for the most part, the Wallaby Islands are an ideal hunting-ground, as numbers of quail and pigeon are common. We camped ashore at the East Wallaby Island, and pleasant indeed it was after an arduous day's tramp through the thick scrub to return to the little camp beside the great coral-reef. Looking seawards could be seen the fringing barrier, its length marked by the line of white where the ocean rollers pounded unceasingly against the reef, showing against the western horizon.

A cluster of dark islets afforded an ideal anchorage for the lugger, and as evening shadows lengthened, the anglers of the party here obtained sport to their heart's content. The memory of those islands is a very pleasant one, for in such a locality one seemed to get very close indeed to Nature and her ways, and at the back of all was the knowledge that a romantic and most interesting history shrouded the lonely islands.

Perhaps no spot in Australia is of greater interest, zoologically speaking, than these islands, which together make up such a formidable and dangerous outpost to the littoral of Western Australia.